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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/634,839 | 08/06/2003 | Shinji Sugatani | 021331A | 8605 |

23850 7590 05/02/2005

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| EXAMINER |
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WEISS, HOWARD

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| ART UNIT | PAPER NUMBER |
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2814

DATE MAILED: 05/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-----------------|-----------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/634,839 | SUGATANI ET AL. | |
| | Examiner | Art Unit | |
| | Howard Weiss | 2814 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 ~~is~~ are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 ~~is~~ are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Attorney's Docket Number: 021331A

Filing Date: 8/6/03

Continuing Data: Division of 10/289,295 (11/7/02 now U.S. Patent No. 6,639,280); RCE
established 2/22/05

Claimed Foreign Priority Date: 1/17/02 (JPX)

Applicant(s): Sugayani et al. (Sekino)

Examiner: Howard Weiss

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/22/05 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1 to 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (JP 09-246505), Freestone et al. (U.S. Patent No. 3,054,709), Lin et al. (U.S. Patent No. 6,596,185) and Wada et al. (U.S. Patent No. 6,797,539).

Kato shows most aspects of the instant invention (e.g. Figures 1) including

- forming a laminated substrate **1** consisting of a support layer **2**, an insulating layer **3b** and a device layer **4**
- said device and support layer consist of single crystal silicon and their principle crystallographic axes are $\langle 110 \rangle$ and shifted by 45°

Kato does not show the forming of scribe lines parallel to said axes and defined only on the device formation layer, semiconductor devices formed between said scribe lines, grooves formed through said device layer, splitting the substrate along said scribe lines and wherein at least 70% of all wiring extends to a direction substantially parallel to said axis. Freestone et al. teach (e.g. Figures 1 to 3) to form scribe lines **4** only on the device formation layer **1** and parallel on a principle plane (and, therefore, parallel to a principle axis) to form wafers with smooth edges and less strain (Column 1 Lines 39 to 41). It would have been obvious to a person of ordinary skill in the art at the time of invention to form scribe lines only on the device formation layer and parallel to the principle axis as taught by Freestone et al. in the process of Kato to form wafers with smooth edges and less strain.

Lin et al. teach (e.g. Figures 2) to form grooves **112** through the device layer **108** and to form devices **102** between scribe lines **104** to reduce stress-related problems resulting from separating components (Column 1 Lines 30 to 55). It would have been obvious to a person of ordinary skill in the art at the time of invention to form grooves through the device layer and to form devices between scribe lines as taught by Lin et al. in the process of Kato to reduce stress-related problems resulting from separating components.

Wada et al. teach (e.g. Figures 2 and 3) to form wiring **5** at least 70% parallel to the scribe lines (i.e. sides of the substrate and device layers) and, therefore, parallel to the crystallographic axes to aid in finding defective chips (Column 8 Lines 6 to 16). It would have been obvious to a person of ordinary skill in the art at the time of invention to form wiring at least 70% parallel to the crystallographic axes as taught by Wada et al. in the process of Kato to aid in finding defective chips.

Response to Arguments

4. Applicant's arguments with respect to Claims 1 to 5 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.
6. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 872-9306**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 7:00 AM to 3:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on **(571) 272-1705**.
8. The following list is the Examiner's field of search for the present Office Action:

| Field of Search | Date |
|---|--------------|
| U.S. Class / Subclass(es): 438/ 479, 462, 517 | thru 4/28/05 |
| Other Documentation: none | |
| Electronic Database(s): EAST | thru 4/28/05 |



Howard Weiss
Primary Examiner
Art Unit 2814

HW/hw
29 April 2005